

FIG. 1

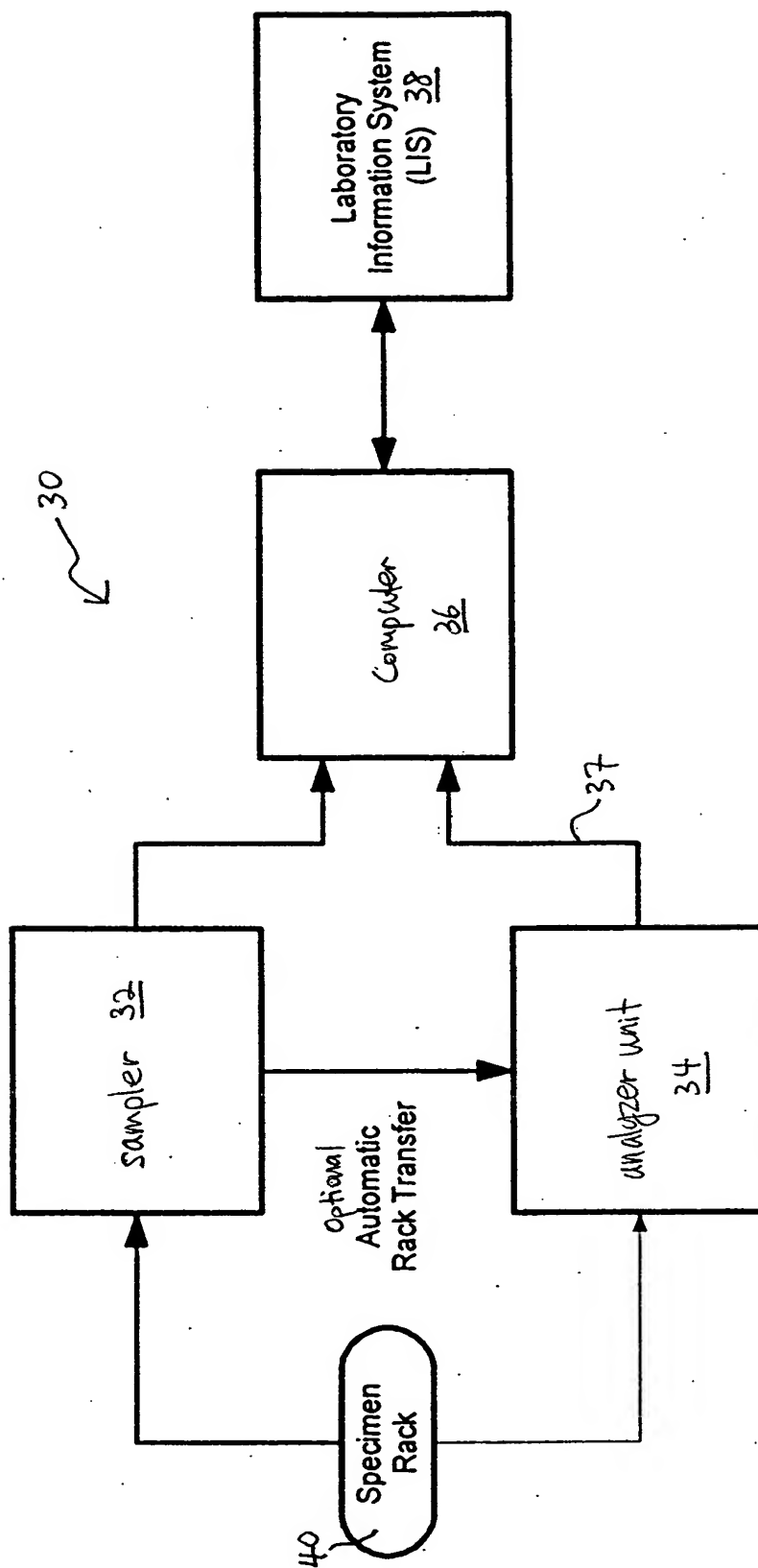


Fig. 2

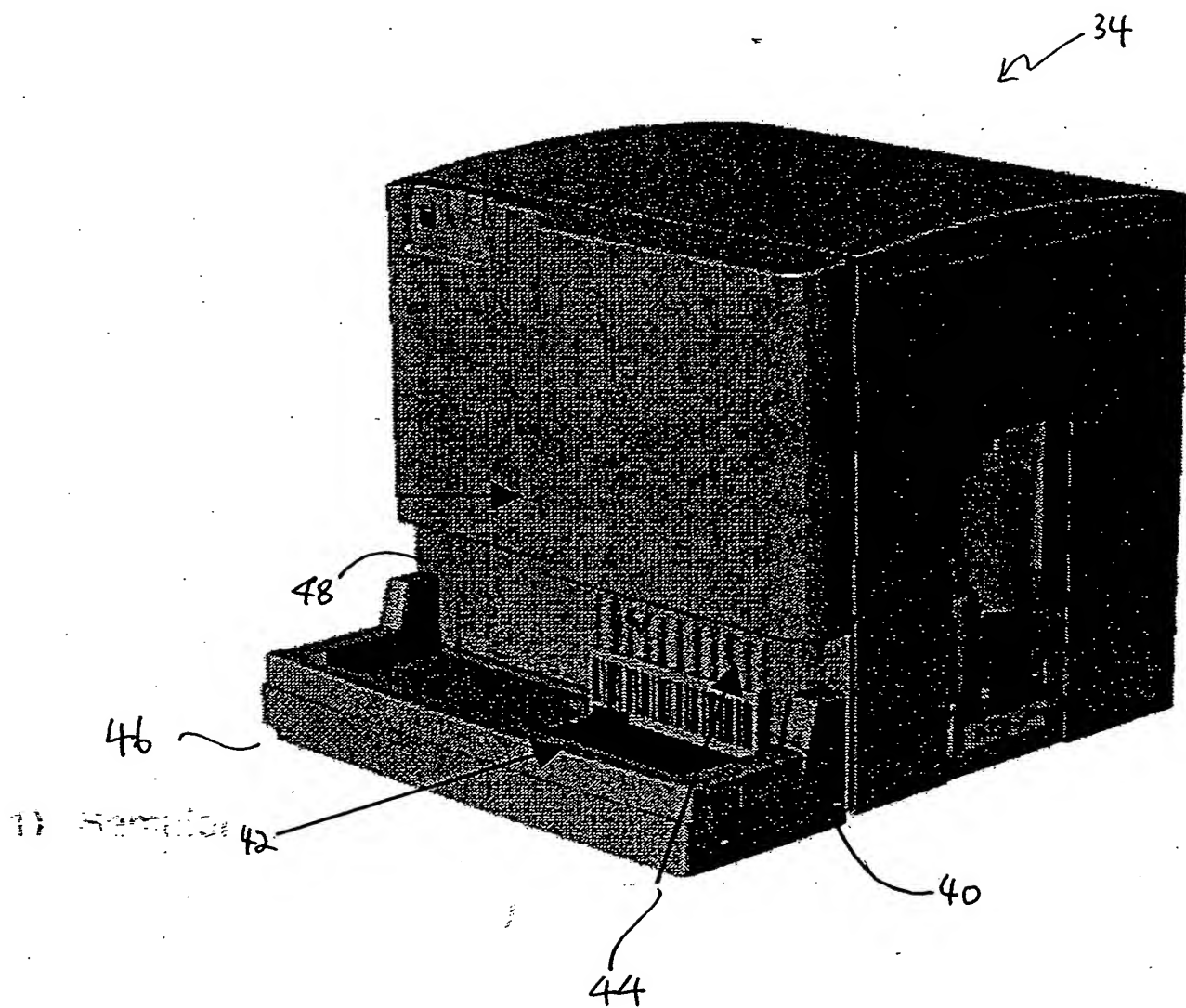


FIG. 3

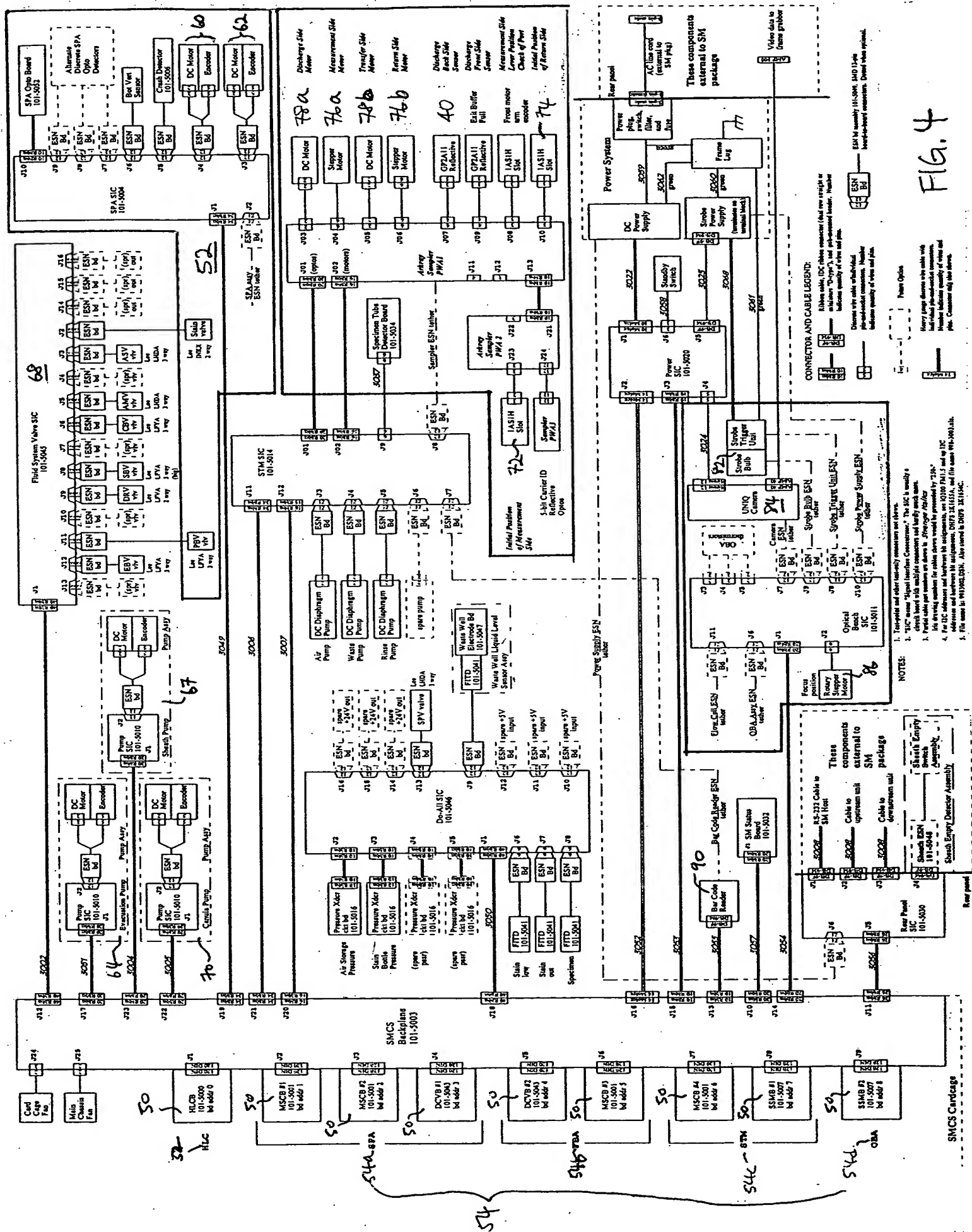


Fig. 4

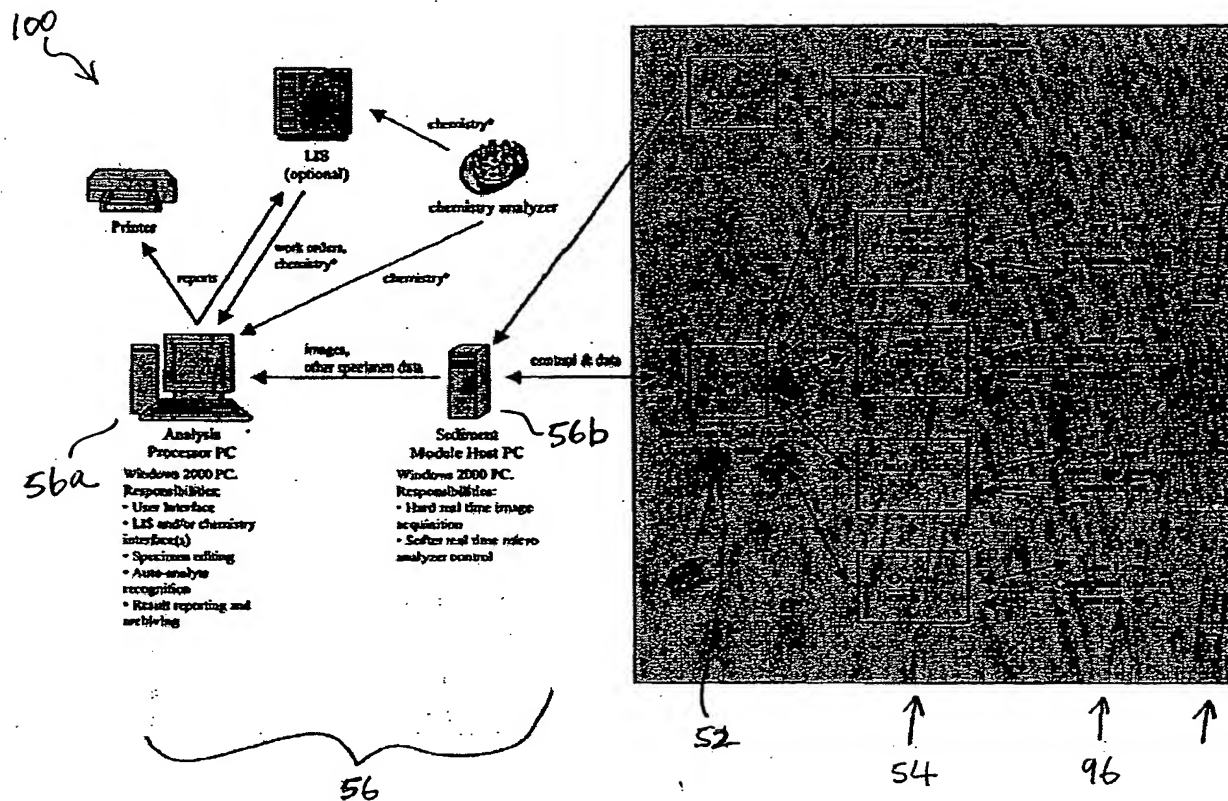


FIG. 5

600		602		604		606	
L1	L2	Begin	End	Comment			
R	H	1	14	Reset <del>low</del> level controllers			
1	6	15	99	Resume running racks			
G	O	18	99	Run racks under host control			
S	S	395	434	Service Specimen (run tubes w/o host PC)			
0	E	100	103	Clear Rack			
R	Q	104	148	Run QC Control			
1	7	149	335	Run autofocus control			
W	8	336	349	Wait for command, button, rack or timeout			
Z	Z	393	394	Sleep			
P	I	350	366	Irisolve Clean			
W	S	435	439	Short Wakeup			
W	M	440	444	Medium Wakeup			
W	L	445	449	Long Wakeup			
S	D	450	453	Shutdown			
W	A	350	392	Wash with bleach			
D	L	454	481	run Diluent			
K	L	482	485	Kill (wait for power off)			
B	X	486	487	Background Exit Error			

FIG. 6

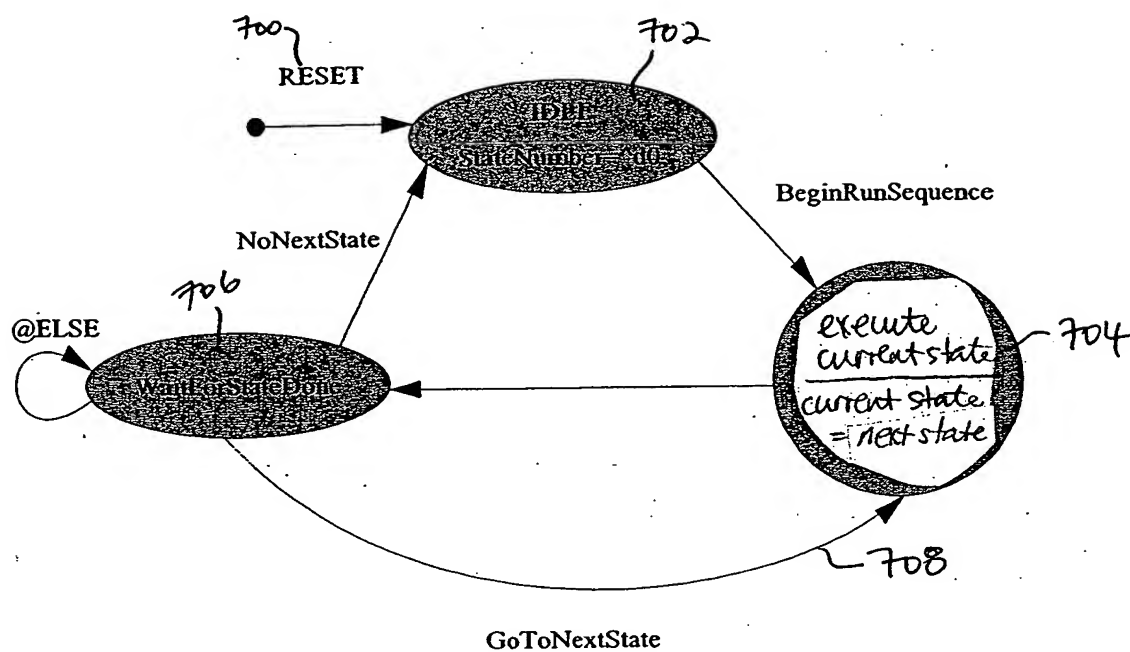


FIG. 7







State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAcstat	FBASat	STMstat	OBAstat	SMstat	ToSM	TValue	Tfunc	Sens	Stat	SMsk	End	Brn	Dest	Translated Parameters
97	End Slave Branch to Wait/JUSTMAJ161	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0101	40	0x00, 0x00, 0x0000, 0x0101, 40,
98	Coastal GO flash and button for 5 seconds	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x12	0x00	0x0000	0x0000	0x0000	0x12, 0x00, 0x0000, 0x0000, 0x0000,
99	End of GO sequence	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
100	Begin Clear (Clear Rack), full exp 30.1524	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
101	Send Clear to STM Home Pipette	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
102	Begin STM Home Pipette	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
103	End of Clear (Clear Rack), full exp 30.1524	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
104	Begin of RCT (Run OC Control)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
105	Relieve tube number, branch to Wash (WAS) if 1 (0x01), term otherwise	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
106	Relieve tube number, branch to Diluent (DIL) if 2 (0x02), term otherwise	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
107	Relieve tube number, branch to Diluent (DIL) if 3 (0x03), term otherwise	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
108	Relieve tube number, branch to Autoclave (17) if 5 (0x05), term otherwise	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
109	Relieve tube number, branch to Diluent (DIL) if 10 (0x0A), term otherwise	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
110	Relieve tube number, branch to Diluent (DIL) if 10 (0x0A), term otherwise	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
111	Get Sample into test	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
112	If SH replicates 50, branch to "Move to Next control tube position"	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
113	If SH replicates 50, branch to "Clear Rack"	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
114	To test tube	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
115	Wait for "Image processing" bit	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
116	Wait for "Image processing" bit	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
117	Start sheath for background capture	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
118	Wait for SB complete	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
119	Timer delay before capture	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
120	Capture background and wait for frame processing complete (future wait for frame capture complete) for short sample	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
121	Send "Short Sample" signal and wait for frame processing complete (future wait for frame capture complete) if success, for frame capture complete	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
122	Turn off EP pump on SPA	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
123	Wait for EB complete	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
124	Move pipette down to substrate position in test tube	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
125	Wait for TO complete and "Image processing" bit	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
126	Start aspiration for sample transfer	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
127	Wait for AS and RC complete	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
128	Timer delay before capture	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
129	Capture sample (frames and wait for sample frame capture complete or short sample frame capture complete)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
130	Send "Short Sample" signal and wait for sample frame capture complete	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
131	Turn off EP pump on SPA, SP pump on FBA	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
132	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
133	To Waste Well	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
134	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
135	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
136	Turn On Rinse Pump and Rinse Pipette	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
137	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
138	Clear Pipette Home CP and SP	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
139	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
140	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
141	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
142	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
143	Send completion signal to host	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,
144	Wait for EB's complete (SPA and FBA)	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0x0000	0x0000	0x00	0x0000	0x00	0x00	0x0000	0x0000	0x0000	0x00, 0x00, 0x0000, 0x0000, 0x0000,

Fig. 8C



















State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAsat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Trunc	Sens	Stat	Shk	End	Brn	Dest	Translated Parameters
436	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
437	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
438	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
439	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
440	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x07048	0x00	0x01	0x0101	0x0000	0x0000	0x00, 0x01, 0x0101, 0x0000, 0x0000,
441	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
442	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
443	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
444	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
445	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x07048	0x00	0x01	0x0101	0x0000	0x0000	0x00, 0x01, 0x0101, 0x0000, 0x0000,
446	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
447	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
448	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
449	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
450	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	453	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
451	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
452	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
453	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
454	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
455	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
456	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
457	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
458	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
459	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
460	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
461	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
462	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
463	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
464	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
465	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
466	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
467	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
468	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
469	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
470	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
471	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
472	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
473	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
474	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
475	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
476	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
477	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
478	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
479	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
480	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
481	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
482	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
483	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
484	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
485	End of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
486	Start of S/W	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000,
487	End of S/W	0x0000	0x0000	0x00																

Fig. 8J

402 404 406 408 410 412 414 416 418 420 422 424 426 428 430 432 434 436

2-ru

State Order	State Description	Energized (Valves Only)	EP	First Motor	Secnd Motor	SP	Sensor Select	Sensor State	Sensor Mask	Motor Test	SM Test	ToSM	Tvalue	Tfunc	End Ctrl	Brn Ctrl	Dest
0	IDLE		0	80FF	0	80FF	0000	0	0	0	0X0000	0x0000	0x0000	0x0000	0x0007	0x0000	0x0000
1	"TT" Home Evacuation Pump / Rotate out to tube	J7 air chrg vlv, EBV3,	80FD	80FF	8441	80FF	0000	0	0	FB	0X0000	0X11	0X0000	0X0	0x0007	0x0000	0x0000
2	Place Roller on Tube (EP -45 Deg)	EBV3,	860C	80FF	0	80FF	0000	0	0	B3	0X0000	0X11	0X0000	0X0	0x0007	0x0000	0x0000
3	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X11	0X0000	0X0	0x0007	0x0000	0x0000
4	"PH" - Home Vertical TO Lift Pipetter AND SEND PIPETER BACK TO back sensor then to WASTE WELL		80FF	80FE	80FF	80FF	0000	0	0	FF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
5	Home Rotational Motor to back sensor		80FF	80FE	80FF	80FF	0000	0	0	FF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
6	Rotate out -3 deg to waste well		80FF	80FF	8440	80FF	0000	0	0	FB	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
7	Checking pressure	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	6	54	F3	0X0000	0X00	0X0000	0X0	0x0001	0x0101	9
8	Recharge	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	5	54	F3	0X0000	0X00	0X0000	0X0	0x0001	0x0000	0x0000
9	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X12	0X0000	0X0	0x0007	0x0000	0x0000
10	"TD" - Down to test tube		0	8643	0	80FF	0000	0	0	23	0X0000	0X13	0X0000	0X0	0x0007	0x0000	0x0000
11	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X13	0X0000	0X0	0x0007	0x0000	0x0000
12	"AS" - Mix Sample (BP 1.5 Sec)	J10 burp vlv, CBV3, EBV3,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X17	0X0004	0x42	0x0000	0x0000	0x0000
13	Delay Before Aspirate	CBV3, EBV3,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X17	0X0023	0x42	0x0000	0x0000	0x0000
14	Aspirate to beginning of Flow Cell	SI, J7 air chrg vlv, CBV3, PBV3,	4008	80FF	0	80FF	0000	0	0	33	0X0000	0X17	0X0024	0x42	0x0000	0x0000	0x0000
15	Activate SBV to fill flow cell while pulling EP during fast push of CP	SBV3,	4022	80FF	0	80FF	0000	0	0	33	0X0000	0X17	0X0025	0x42	0x0000	0x0000	0x0000
16	Activate SBV to fill flow cell while pulling EP during slow push of CP during analysis	SBV3,	401D	80FF	0	80FF	0000	0	0	33	0X0000	0X17	0X0000	0X0	0x0007	0x0000	0x0000
17	Dummy	SBV3,	0	80FF	0	80FF	0000	0	0	E3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
18	"TW" Lift Pipetter to 2/3 of the tube		80FF	D556	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
19	Lift Pipetter to the top and Spit air	J10 burp vlv,	80FF	80FE	0	80FF	0000	0	0	FB	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
20	Rotate in to Waste Well		80FF	80FF	8442	80FF	0000	0	0	E3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
21	Down to Waste Well		80FF	8647	0	80FF	0000	0	0	F3	0X0000	0X15	0X0000	0X0	0x0007	0x0000	0x0000
22	Dummy		80FF	80FF	0	80FF	0000	0	0	33	0X0000	0X00	0X0027	0x42	0x0000	0x0000	0x0000
23	"CP" Clean Flowcell Window for 2 sec	CBV3, SBV3,	4019	80FF	0	80FF	0000	0	0	E3	0X0000	0X16	0X0000	0X0	0x0007	0x0000	0x0000
24	Raise Pipetter		80FF	D556	0	80FF	0000	0	0	F3	0X0000	0x16	0X0000	0X0	0x0007	0x0000	0x0000
25	Clear Pipetter	J10 burp vlv,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x16	0X0005	0x42	0x0000	0x0000	0x0000
26	Lift Pipetter		80FF	80FE	0	80FF	0000	0	0	F3	0X0000	0x16	0X0000	0X0	0x0007	0x0000	0x0000
27	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X16	0X0000	0X0	0x0007	0x0000	0x0000
28	"PS" Prime Sheath Supply Line		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0028	0x42	0x0000	0x0000	0x0000
29	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x20	0X0000	0X0	0x0007	0x0000	0x0000

FIG. 9A

30	"PP" Prime Evacuation Pump	EBV3,	D758	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
31	Hold EBV3 for 3 sec	EBV3,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0029	0X42	0X0000	0X0000	0X0000
32	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X21	0X0000	0X0	0X0007	0X0000	0X0000
33	"PL" Home EP	EBV3,	80FD	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
34	Prime Inner Line #2	CBV3, SBV3,	DB5C	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
35	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X22	0X0000	0X0	0X0007	0X0000	0X0000
36	"TR" Turn On Rinse Pump for 2 Sec		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X23	0X0000	0X42	0X0000	0X0000	0X0000
37	Checking pressure	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	6	54	F3	0X0000	0X23	0X0000	0X0	0X0001	0X0101	38
38	Recharge	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	5	54	F3	0X0000	0X23	0X0000	0X0	0X0001	0X0000	0X0000
39	Fill sheath tank for 2 sec		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X23	0X0000	0X42	0X0000	0X0000	0X0000
40	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X23	0X0000	0X0	0X0007	0X0000	0X0000
41	"HP" Home EP	EBV3,	80FD	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
42	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X24	0X0000	0X0	0X0007	0X0000	0X0000
43	"SB" Transfer Sheath During Background	CBV3, SBV3,	401A	80FF	0	80FF	0000	0	0	33	0X0000	0X31	0X0000	0X0	0X0101	0X0000	0X0000
44	Dummy	CBV3, SBV3,	0	80FF	0	80FF	0000	0	0	33	0X0000	0X31	0X0000	0X0	0X0007	0X0000	0X0000
45	"EB" End Background (EP off)	CBV3, SBV3,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X34	0X0000	0X0	0X0007	0X0000	0X0000
46	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X34	0X0000	0X0	0X0007	0X0000	0X0000
47	"DF" Drain Flowcell	PBV3,	DE5F	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
48	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X26	0X0000	0X0	0X0007	0X0000	0X0000
49	"IC" Home EP	EBV3,	80FD	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
50	Place Roller on Tube (EP -45 Deg)	EBV3,	860C	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
51	Down to test tube	PBV3,	80FF	8643	0	80FF	0000	0	0	E3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
52	Wash Flow Cell With IRISOLVE	PBV3,	E061	80FF	0	80FF	0000	0	0	B3	0X0000	0X27	0X0000	0X0	0X0007	0X0000	0X0000
53	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0XFF	0X0000	0X0	0X0007	0X0000	0X0000
54	Start "ZZ"		0	80FF	0	80FF	0000	0	0	0	0X0000	0XFF	0X0000	0X0	0X0000	0X0080	0X0000
55	End "ZZ"		0	80FF	0	80FF	0000	0	0	0	0X0000	0XFF	0X0000	0X0	0X0000	0X0000	0X0000
56	"RV" Reset Valves (subroutine to be used only during "BD" to turn off valves)		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0X0007	0X0000	0X0000
57	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X26	0X0000	0X0	0X0007	0X0000	0X0000
58	"FP" Checking pressure		80FF	80FF	0	80FF	10B0	6	54	F3	0X0000	0X00	0X0000	0X0	0X0001	0X0101	60
59	Recharge		80FF	80FF	0	80FF	10B0	5	54	F3	0X0000	0X00	0X0000	0X0	0X0001	0X0000	0X0000
60	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X30	0X0000	0X0	0X0007	0X0000	0X0000
61	"S1" Turn on Sheath fill pump		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X32	0X0000	0X0	0X0007	0X0000	0X0000
62	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X32	0X0000	0X0	0X0000	0X0000	0X0000

FIG. 9B

FIG. 9C

509

504

502

506

508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535

State Order	Description	Energized Block Valves Only	CP	Dummy Motor	SP	Sensor Select	Sensor State	Sensor Mask	Motor Test	SM Test	ToSM	Tvalue	Trunc	End Ctrl	Bran Ctrl	Dest
0	High Hairs CP and SP	CBV3	0	80FF	80FF	0	0000	0	0	0X0000	0xFF	0X0000	0X0	0x0007	0x0000	0x0000
1	High Hairs CP and SP	CBV3	80FE	80FF	80FF	80FE	0000	0	FF	0X0000	0x21	0X0000	0X0	0x0007	0x0000	0x0000
2	High Hairs CP and SP	CBV3	8601	80FF	80FF	80FF	0000	0	BF	0X0000	0x21	0X0000	0X0	0x0007	0x0000	0x0000
3	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x21	0X0000	0X0	0x0007	0x0000	0x0000
4	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	BE	0X0000	0x00	0X0000	0x0	0x0007	0x0000	0x0000
5	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x23	0X0000	0X0	0x0007	0x0000	0x0000
6	High Hairs CP and SP	DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	BF	0X0000	0x00	0X0000	0x0	0x0007	0x0000	0x0000
7	High Hairs CP and SP	DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x24	0X0000	0X0	0x0007	0x0000	0x0000
8	High Hairs CP and SP	SBV3, PBV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FE	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
9	High Hairs CP and SP	SBV3, PBV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x00	0x0014	0x42	0x0000	0x0000	0x0000
10	High Hairs CP and SP	SBV3, PBV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x25	0X0000	0X0	0x0007	0x0000	0x0000
11	High Hairs CP and SP	SBV3, PBV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FE	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
12	High Hairs CP and SP	SBV3, PBV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x26	0X0000	0X0	0x0007	0x0000	0x0000
13	High Hairs CP and SP	CBV3	80FE	80FF	80FF	80FE	0000	0	FF	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
14	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x27	0X0000	0X0	0x0007	0x0000	0x0000
15	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x28	0x0015	0x42	0x0000	0x0000	0x0000
16	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	3F	0X0000	0x28	0x0016	0x42	0x0000	0x0000	0x0000
17	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	3F	0X0000	0x28	0X0000	0X0	0x0007	0x0000	0x0000
18	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	3F	0X0000	0x28	0X0000	0X0	0x0000	0x0000	0x0000
19	High Hairs CP and SP	CBV3	80FF	80FF	80FF	80FF	0000	0	FE	0X0000	0x29	0X0000	0X0	0x0007	0x0000	0x0000
20	High Hairs CP and SP	CBV3, SBV3, DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FE	0X0000	0x29	0X0000	0X0	0x0007	0x0000	0x0000
21	High Hairs CP and SP	CBV3, SBV3, DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x29	0X0000	0X0	0x0007	0x0000	0x0000
22	High Hairs CP and SP	CBV3, SBV3, DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FE	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
23	High Hairs CP and SP	CBV3, SBV3, DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x30	0X0000	0X0	0x0007	0x0000	0x0000
24	High Hairs CP and SP	CBV3, SBV3, DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	0	0X0000	0xFF	0X0000	0X0	0x0000	0x0080	0x0000
25	High Hairs CP and SP	CBV3, SBV3, DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	0	0X0000	0xFF	0X0000	0X0	0x0000	0x0000	0x0000
26	High Hairs CP and SP	CBV3, SBV3, DRV3, EBV3	80FE	80FF	80FF	80FF	0000	0	FF	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
27	High Hairs CP and SP	CBV3, SBV3, DRV3, EBV3	8601	80FF	80FF	80FF	0000	0	BF	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
28	High Hairs CP and SP	DRV3, EBV3	D253	80FF	80FF	80FF	0000	0	BF	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
29	High Hairs CP and SP	DRV3, EBV3	80FF	80FF	80FF	80FF	0000	0	FF	0X0000	0x31	0X0000	0X0	0x0007	0x0000	0x0000

FIG. 10A

FIG. 108



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602 604 606 608 610 612 614 616 618 620 622 624 626 628 630 632 634 636 638 640

State	State Description	Door	Band	SM	CM	CI	CO	RC	SenSel	Stat	Smk	Mist	Slntst	ToSM	Tval	Tinc	EndCil	BrnCil	Dest
0	Reset in general	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x00	0x0000	0x00	0x0000	0x0000	0x0000
1	Start MT: Start HC	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
2	End HC	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
3	Start HR	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
4	End HR	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
5	Start US: Branch if upstream not ready	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x04	0x04	0x04	0x0000	0	0x0000	0x42	0x0000	0x0000	12
6	Signal OK to send rack: Wait for complete signal (ready)	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	12
7	Signal OK to send rack: Wait for complete signal (ready)	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
8	Delay 200ms	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x42	0x0000	0x0000	0x0000
9	Unsignal OK to send rack: feed in 2 sec	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x42	0x0000	0x0000	0x0000
10	End US	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	5
11	Wait for other rack	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x42	0x0000	0x0000	0x0000
12	Run Rack in	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x43	0x0000	0x0000	17
13	Extra Second to make flush: Read rack ID for transmission	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x42	0x0000	0x0000	0x0000
14	Stop Conveyor: Check if room at output side	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	17
15	Move Rack in	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
16	Go! Rack	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x31	0x0000	0x43	0x0000	0x0000	18
17	No Rack	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x39	0x0000	0x42	0x0000	0x0000	0x0000
18	End MT: End US	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
19	Start MN: move to next tube position	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
20	Complete the move and get tube number	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
21	Stabilize before reading tube detector	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x42	0x0000	0x0000	0x0000
22	Store tube detector value: branch to scan if tube present	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x05	0x48	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	24
23	Unconditional branch to EndMN	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	25
24	Scan barcode	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
25	End MN: send completion to MC	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x32	0x0000	0x00	0x0000	0x0000	0x0000
26	Start ER	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
27	Store tube detector value: branch to scan if tube present	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
28	End ER	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
29	End ER: send completion to MC	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x42	0x0000	0x0000	0x0000
30	End ER: send completion to MC	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x33	0x0000	0x00	0x0000	0x0000	0x0000
31	Begin CR: run in reverse	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
32	Home: sample carrier while discharge runs	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x44	0x0000	0x42	0x0000	0x0000	0x0000
33	End CR	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
34	Begin CR: run in reverse	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x30	0x0000	0x02	0x0000	0x0000	0x0000
35	Home: sample carrier while discharge runs	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
36	Move Sample Lever to select position	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
37	Home Sample Lever	0x00000000	0x00000000	0x80FF	0x80FF	0x80FF	0x80FF	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000

FIG. 11A

38	Run carrier output buffer motor until sensor not blocked or until time out	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0000	0x0000	0x0230	0x00	0x01	0x00	0x0000	0	0x0017	0x42	0x0001	0x0000	0x0000
39	Run CO a little longer	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0018	0x42	0x0007	0x0000	0x0000
40	End CR	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0000	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x33	0x0000	0x00	0x0101	0x0000	0x0000
41	Begin IC (is Clear); if output sensor not blocked branch to 'is Clear = True'	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0000	0x0000	0x0230	0x00	0x01	0x00	0x0000	0x30	0x0000	0x00	0x0101	0x0001	44
42	Run carrier output buffer motor until sensor not blocked or until time out; if timeout branch to 'is Clear = False'	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0230	0x00	0x01	0x00	0x0000	0	0x0019	0x43	0x0001	0x0000	45
43	Run CO a little longer	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x001A	0x42	0x0007	0x0000	0x0000
44	'is Clear = True'; send TC branch to End IS	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x54	0x0000	0x00	0x0000	0x0101	46
45	'is Clear = False'; send F	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x46	0x0000	0x00	0x0101	0x0000	0x0000
46	End IS	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0101	0x0000	0x0000
47	Begin WR	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x04	0x04	0x04	0x0000	0	0x0000	0x00	0x0001	0x0000	0x0000
48	End WR	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x00	0x00	0x00	0x0000	0x52	0x001B	0x42	0x0000	0x0000	0x0000
49	Begin ZZ	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x00	0x00	0x00	0x0000	0	0x0000	0x00	0x0000	0x0000	0x0000
50	End ZZ	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x00	0x00	0x00	0x0000	0xFF	0x0000	0x00	0x0000	0x0080	0x0000
51	End ZZ	0x00000000	0xFFFFFFFF	0x0000	0x80FF	0x0000	0x80FF	0x0900	0x0000	0x0000	0x00	0x00	0x00	0x0000	0xFF	0x0000	0x00	0x0000	0x0000	0x0000

Fig. 11B



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